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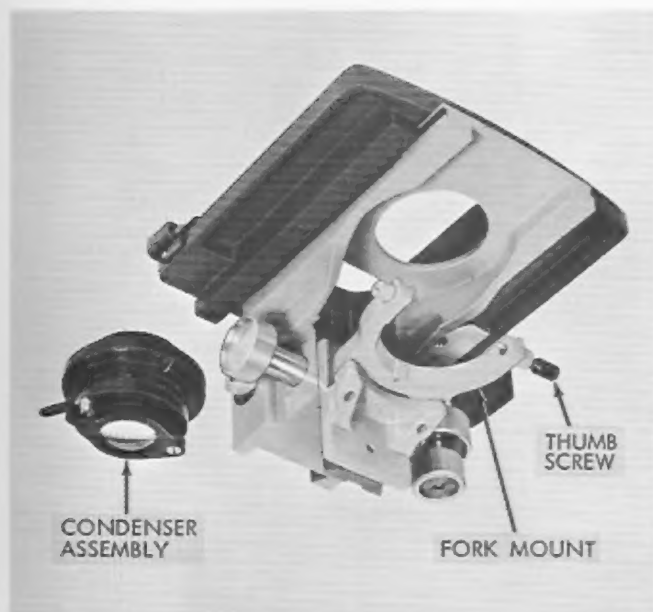


Figure 16. Removal of Condenser Assembly

laboratory use and is essential for microscopes equipped with oil immersion objectives.

- b. Abbe Condenser, N.A. 0.66, Cat. No. 1089.
This condenser is adequate for microscopes equipped with dry objectives.
- c. Auxiliary Swing-in Condenser, Cat. No. 1090.
This condenser (figure 19) permits filling the

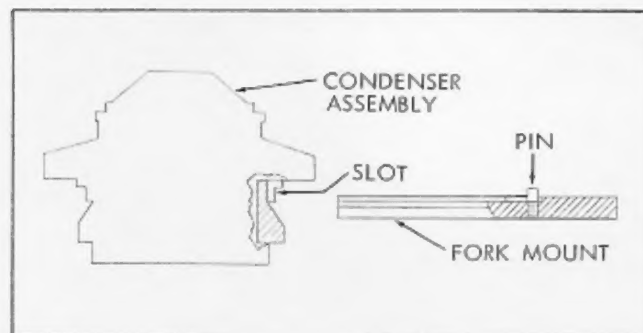


Figure 17. Fork Mount

entire field of the 4X scanning objective when using the No. 1036 in-base illuminator, or when using external illuminators with the plano mirror. It is not required when the microscope is equipped with on-base illuminators, Cat. No. 1034 and No. 1037.

If ordered later, the auxiliary swing-in condenser and stop pin can be readily attached to the bottom of the condenser mount in the threaded holes provided. The stop pin is provided with an eccentric mounting hole. This makes it possible to adjust the position of the stop pin to ensure that the auxiliary swing-in condenser is centered properly when swung into position.

For instructions on the use of darkfield condenser or phase condenser, see reference manuals furnished with these units.

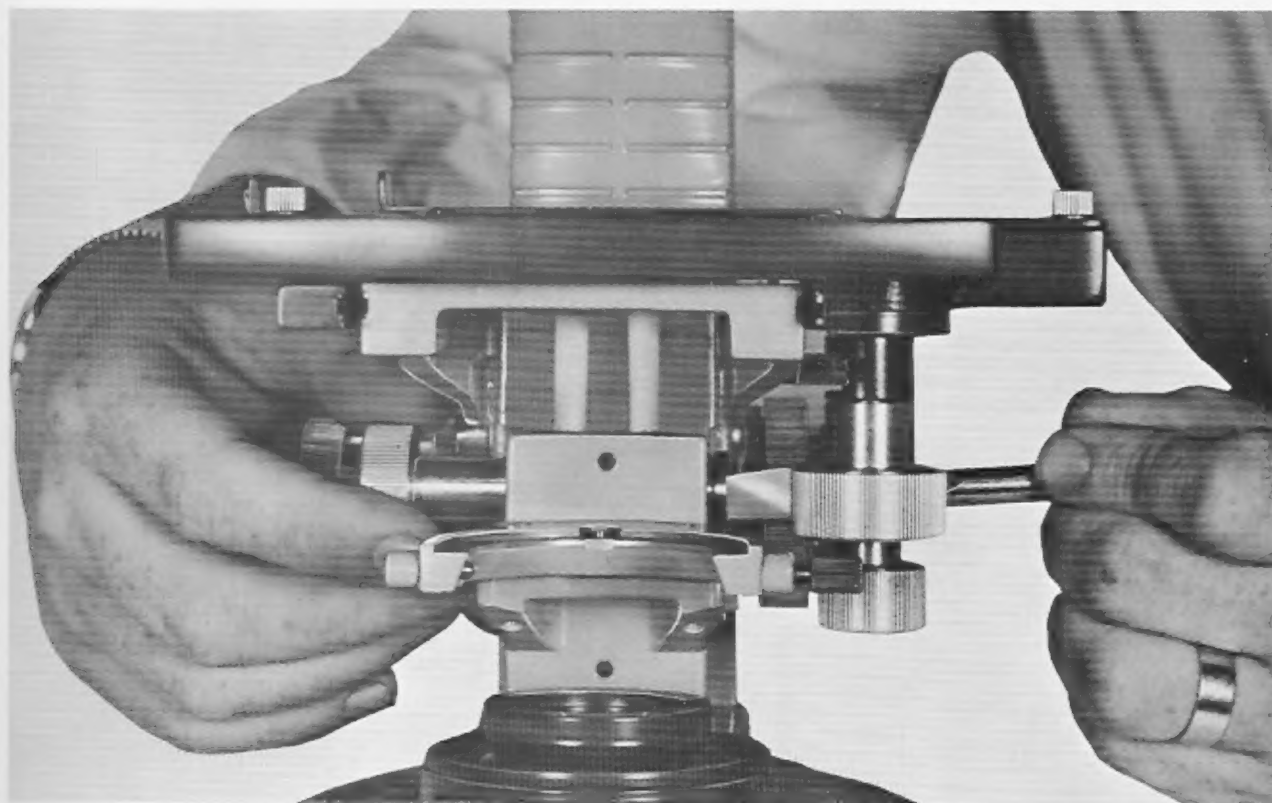


Figure 18. Adjustment of Focusing Tension

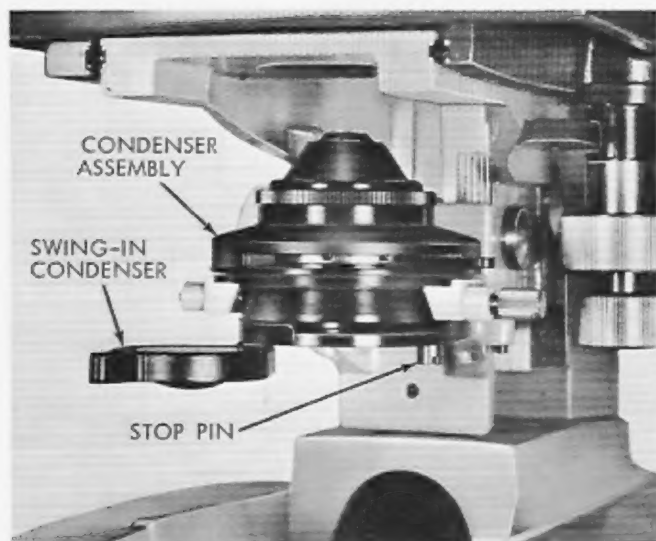


Figure 19. Auxiliary Swing-in Condenser

X BODIES

1. Attaching and Removing Body

All bodies attach interchangeably to the upper arm support. See figure 1. The dovetail is accurately located by firmly tightening the knurled screw. Rotation of 180° does not impair centration. All bodies incorporate a telescope lens system designed specifically for the AO Microstar infinity corrected objective. All air-glass surfaces have a low reflection coating (Americote) for maximum light transmission and image contrast.

2. Monocular Bodies

Two types of monocular bodies are available; (1) Inclined for maximum viewing comfort, Cat. No. 1041; and (2) Vertical for photographic use, Cat. No. 1040.

3. Binocular Body, Cat. No. 1042

AO's unique construction automatically maintains constant tube length by linking the telescope lens assembly to the interpupillary change mechanism (figure 20). This means that a change of interpupillary distance does not affect parfocality, magnification, or calibrations which depend on magnification.

Interpupillary distance is changed by means of the thumb wheel provided. Always use the thumb screw for this adjustment instead of trying to pull the tubes apart. Return to correct interpupillary setting is instantly accomplished by means of the scale provided.

The left eyepiece tube is focusable to compensate for refraction differences of the eyes. The correct procedure is to focus on the specimen through the right eyepiece only, using the fine adjustment of the microscope, while covering the left eyepiece. Then focus the specimen through the left eyepiece by turning the eyepiece while covering the right eyepiece and without disturbing the fine adjustment. This is better practice than alternately opening and closing the eyes.



Figure 20. Interpupillary Distance Adjustment

4. Trinocular Body, Cat. No. 1043

Construction of the trinocular body (figure 21) is very similar to that of the binocular. Instead of a fixed reflecting prism, this component is in a swing-out mount actuated by an external lever. With the prism swung out, all of the light goes to the third tube for photography or screen viewing. The photographic eyepiece tube is easily removable for use with integral cameras or for use with the viewing screen as illustrated in figure 22. The dust cap should always be installed when the photographic eyepiece or integral camera are not in use.

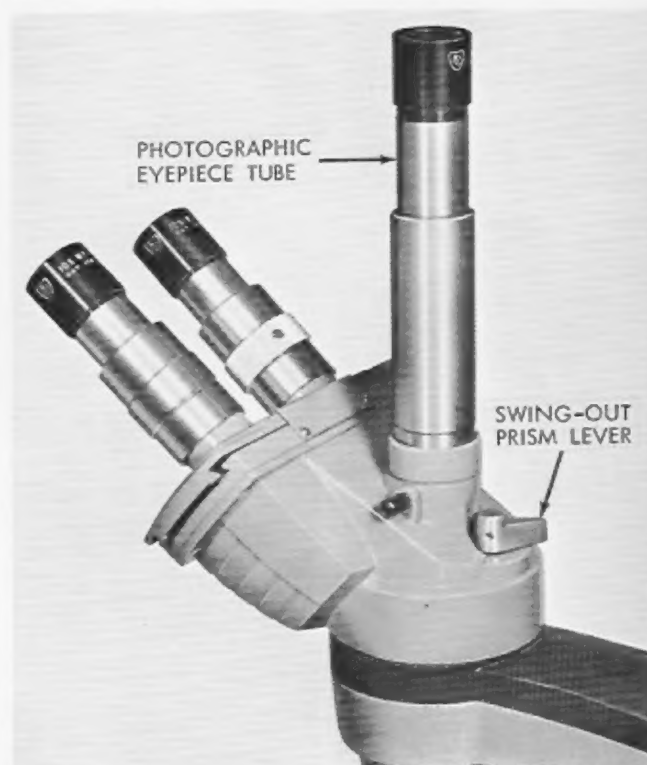


Figure 21. Trinocular Body



Figure 22. Trinocular Body with Integral Cameras and Viewing Screen

XI ILLUMINATORS

1. "On-Base" Type

a. Cat. No. 1034. This illuminator (figure 23) is designed specifically for monocular models. If ordered with the microscope, it comes attached to the base. If ordered separately, it is easily attached by means of the two screws on the under side of the base. It utilizes a 15 watt medium screw base, 115 volt lamp, and plugs directly into a 115 volt AC outlet. A convenient on-off switch is located at the top of the illuminator. The illuminator contains a reflector, blue glass, and spherical condensing lens. It will fill the numerical aperture of all objectives and provide full field illumination of all magnifications, including the 4X scanning lens.

b. Cat. No. 1037. This illuminator is designed specifically for binocular models. Similar in appearance and construction to Cat. No. 1034 except that it contains a more highly corrected aspheric condenser yielding greater intensity.

c. Changing Lamp. To change lamp in Cat. No. 1034 or No. 1037 illuminators, refer to figure 24. The top half of the illuminator is removable from the lower half by unlocking the slide catch on the under side of the illuminator. Tilt the microscope on its side for ready access. When this catch is unlocked, the top half lifts off the lower half. Be sure that the top half is located properly before replacing.

d. Lamp Specification, Cat. No. 611. Manufacturer's designation 15S11/102. Wattage 15, voltage 115, filament C-7A. Base medium screw. Rated hours 400.

2. "In-Base" Type

a. Cat. No. 1036. Recommended for binocular and trinocular use and for photomicrography or screen viewing. When ordered with the microscope, it comes attached to the base. It is operated through the 5-step variable transformer, Cat. No. 1051, utilizing 6.5 volt lamp.

(1) Transformer Setting - For visual observation, operate the transformer at any voltage setting most comfortable. A separate,

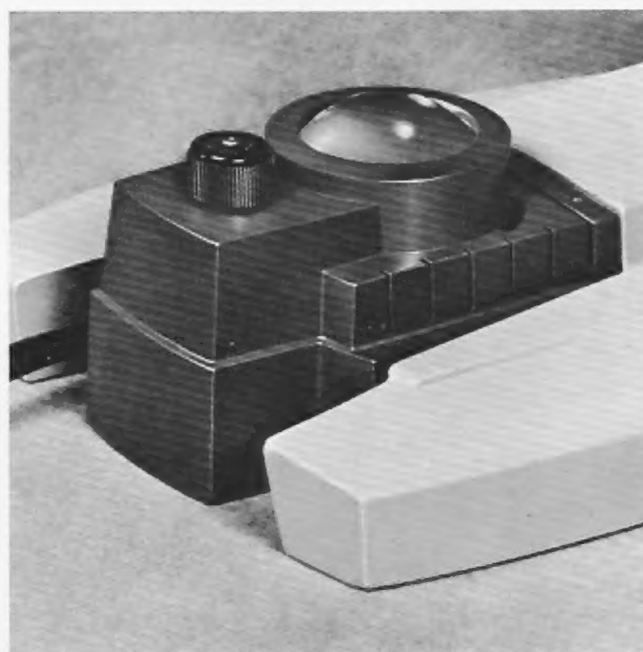


Figure 23. Cat. No. 1034 Illuminator

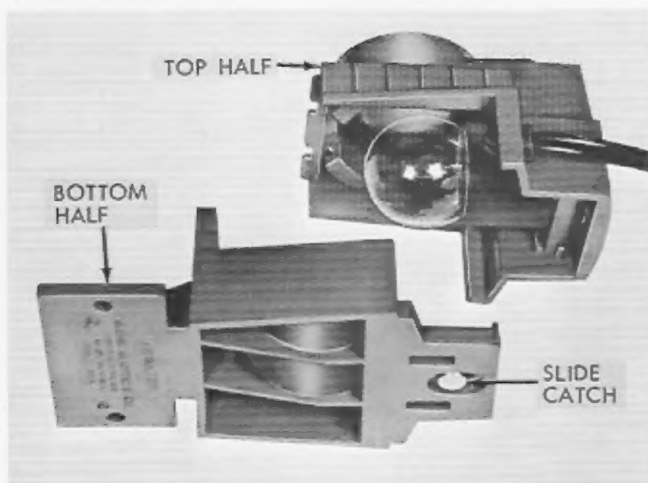


Figure 24. Changing Lamp in "On-Base" Illuminator

33 mm. diameter, blue glass filter is supplied which fits into the top of the illuminator. For visual observation, it gives a quality of light approximating daylight in color temperature and will be preferred for most uses.

- (2) **Neutral Density Filter.** A integral neutral density filter is incorporated as standard equipment in the Cat. No. 1036 illuminator (figure 25). It has a transmission of approximately 10% and is controlled by a lever in the front of the illuminator. Because of the high intensity provided with this illuminator, for ordinary bright field work it will probably be more comfortable to use the neutral density filter.

For phase microscopy, darkfield, and for use with the viewing screen, maximum illumination is desirable, and the neutral density filter should not be used.

Lamp life decreases very rapidly with increased voltage. From this standpoint, it is better to reduce the voltage setting on the transformer in order to reduce intensity, rather than using the neutral density filter at a higher voltage setting. However, reducing voltage makes the light more red; increasing it makes the light bluer. So even for visual observation, some observers will be willing to sacrifice lamp life by setting the transformer at a higher setting, and, if necessary, use the neutral density filter to achieve comfortable intensity.

- b. **Changing Lamp** (See figure 26). The lamp is easily replaced by tilting the microscope over on its side, swinging the lamp socket out on its pivot as illustrated. The lamp is of the pre-focus type and is removed by pushing down and turning slightly counterclockwise to disengage the slots from the pins. A special tool, AO #1036-856, consisting of a fiber tube with a

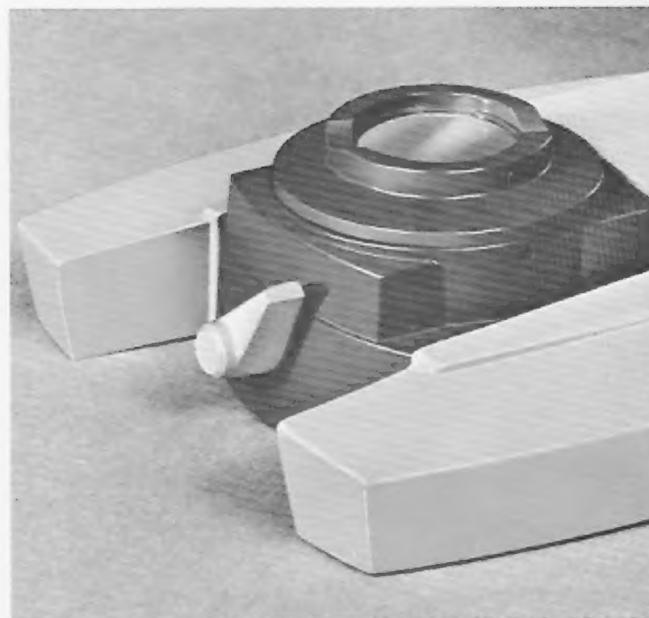


Figure 25. Cat. No. 1036 Illuminator

rubber insert, is provided with the microscope for removing the lamp.

XII CARE OF THE MICROSCOPE

1. General

Cleanness of all optical components of the microscope is important for good optical performance. Therefore, the microscope, when not in use, should always be covered with the plastic cover provided. If any optical surface becomes badly coated with dust or dirt, all such loose dust or dirt should be blown off with a syringe or removed with a camel's hair brush before attempting to wipe the surface clean.

Optical surfaces should be cleaned with a lint-free cloth, lens tissue, or a Q tip moistened with xylene or alcohol. It is very important to avoid the use of excessive solvent. The cloth, lens tissue, or Q tip

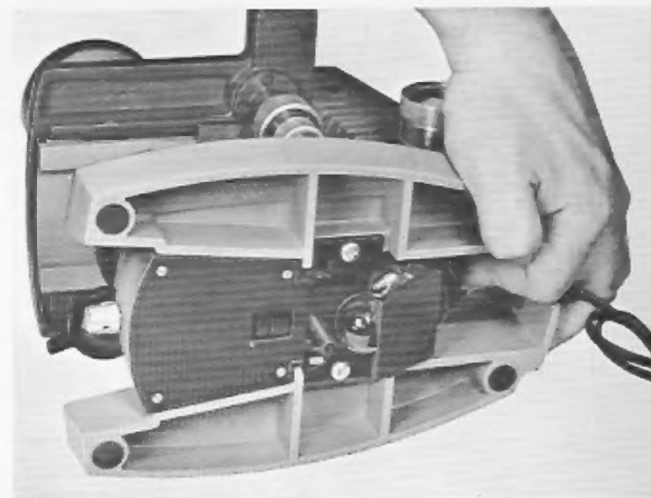


Figure 26. Changing Lamp in "In-Base" Illuminator

should be just moistened with solvent, and not wet enough for the solvent to run down in around the lens with the resultant danger of loosening cement on interior surfaces.

2. Cleaning Objectives

No part of the microscope is quite so vulnerable to lack of complete cleanness as the front lens of the objective. Fingerprints and oil smears on the front lens will greatly impair the performance of a fine objective. Whenever lack of contrast, cloudiness, or poor definition is encountered, carefully check the condition of the front lens with a magnifier. Subtle loss of contrast and definition due to a slight smear on the front lens is often overlooked and can be avoided with routine inspection and cleaning.

The 4X, 10X, and 20X objectives with fairly large plano front lenses can be cleaned with a cloth or lens tissue wrapped around the finger and moistened with xylene or alcohol. The 45X and 100X oil immersion objectives require a little more care, and examination with a magnifier is recommended; the 10X wide field eyepiece, reversed, is an excellent magnifier for this purpose. See figure 27.

To achieve the high degree of flatness obtained with the new #1078 45X infinity corrected objective, it was necessary to utilize a small concave front lens of fairly short radius of curvature. The surface of this front lens can be readily cleaned as illustrated in figure 28 with a toothpick covered with cotton at the tip, or with a small Q tip. Moisten the cotton with xylene



Figure 27. Checking for Cleanness

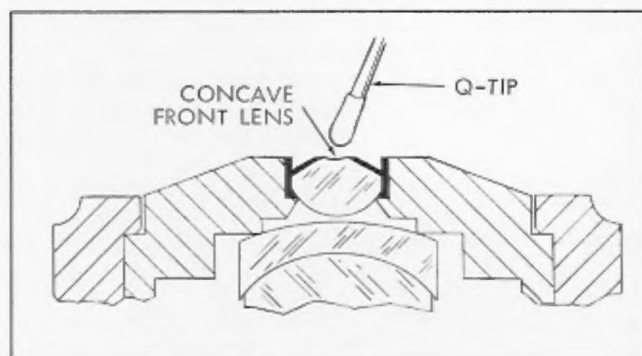


Figure 28. Cleaning Front Lens of #1078 45X Objective

or alcohol, and squeeze almost dry. Wipe the front lens lightly without applying any undue force or scrubbing action. Make sure that the cotton tip contacts the concave lens surface. Check with the magnifier after cleaning.

3. Cleaning Monocular Bodies

The reflecting mirrors within the inclined monocular body are protected from loose dust and dirt by the telescope lens assembly at the bottom of the body and by a protective window at the bottom of the eyepiece tube. Remove and clean the protective window as illustrated in figures 29 and 30. Before removing the two small Allen screws, mark with a pencil the position of the eyepiece tube with respect to the body assembly so that it can be reinstalled at the same height. If the eyepiece tube is removed without marking, it can be returned to the proper height as follows:

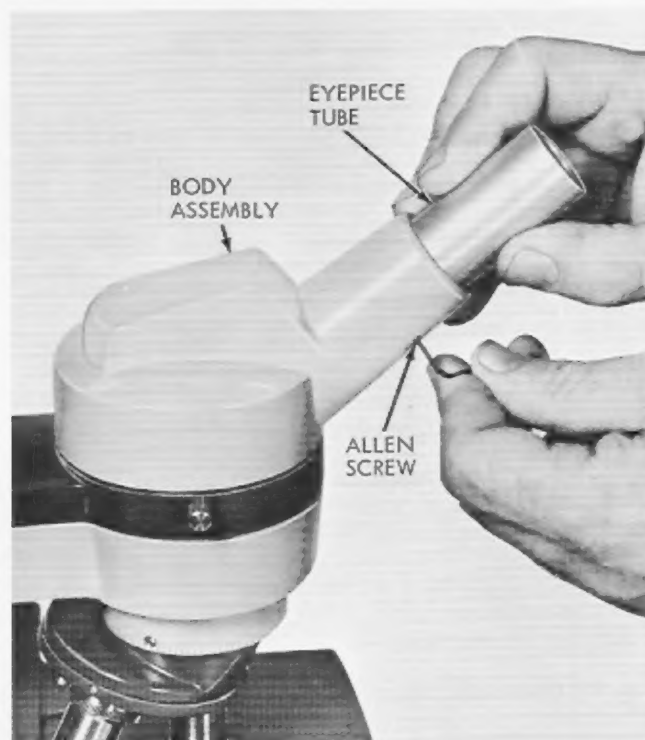


Figure 29. Removing Eyepiece Tube

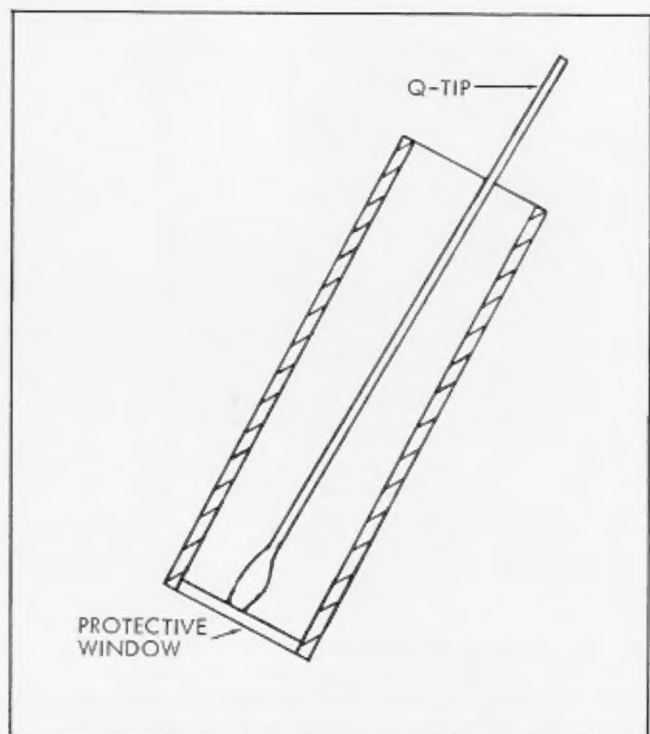


Figure 30. Cleaning Protective Window

Remove the body assembly, insert an eyepiece in the eyepiece tube, and insert the eyepiece tube in body assembly. View a distant object through this assembly, and focus by adjusting the height of the eyepiece tube. When the distant object is in sharp focus, the height of the eyepiece tube is correct. Lock the eyepiece tube in this position with the two Allen screws.

4. Cleaning Binocular Body

The internal optical surfaces of the binocular body are sealed against entry of dust and dirt by the telescope lens assembly at the bottom of the body, and by the plano parallel glass windows at the bottom of each eyepiece tube. The external surface of the telescope lens assembly seldom needs cleaning because it is protected when the body is in place.

CAUTION

When removing the binocular body, be careful not to get fingerprints on the lower lens surface.

The eyepiece tube windows are most easily cleaned with a Q tip moistened with a mild soap solution, or, if necessary, xylene or alcohol. If the eyepieces are removed from the microscope during storage, be sure to protect the eyepiece tubes against the entry of dust and dirt by inserting the plastic eyecups.

5. Cleaning Trinocular Body

The procedure used for cleaning the binocular body also applies for cleaning the trinocular body except

that one additional surface may require cleaning. This surface is the swing-out prism which may collect dust and dirt when the vertical tube, cameras, or viewing screen are removed. The prism can be cleaned with a moistened Q tip. Always keep the protective cap over the third tube opening when accessories are not attached. When the photographic tube is attached, always keep either an eyepiece or the plastic eyecup in place.

6. Mechanical Maintenance

Faithful use of the dust cover is also advantageous in keeping the microscope in good mechanical condition and appearance.

The AO Microstar is finished in a durable finish which is impervious to most commonly used laboratory reagents. It may be cleaned with a cloth dampened with a mild soap solution or xylene. The same precaution of not using too much solvent should also be followed; because such solvent, running down into bearings, can remove necessary lubricant and cause malfunction.

There is very little in the way of re-lubrication or routine-maintenance required on the AO Microstar microscope. As pointed out previously, the focusing mechanism does not require lubrication, nor does the mechanical stage. The only slide which should require periodic lubrication and cleaning is the substage condenser slide. This should be kept clean by wiping away old lubricant with xylene and re-lubricating with Vaseline or a light grease.

7. Removing Nosepiece

To remove the nosepiece (see figure 31), lower the nosepiece with the coarse adjustment until the front allen screw (A) becomes accessible. Back off the allen screw, and remove the nosepiece. Do not alter the position of the two allen screws on the sides of the arm, these are a factory set adjustment.

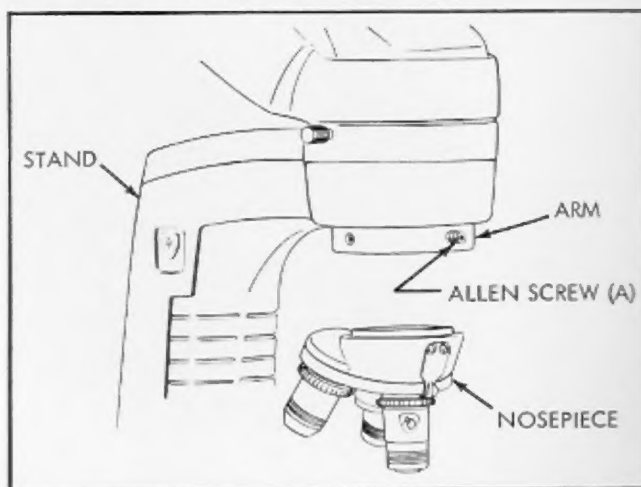


Figure 31. Removing Nosepiece

Complete repair facilities are always available at AO's Instrument Division plant at Buffalo, N. Y., and at many of AO's authorized dealers.

XIII PARTS LIST

1. General

This section contains a listing of parts and illustrations for the AO Microstar Microscope.

The illustrations are used to identify and locate parts of the microscope, and are keyed to the parts lists by the use of index numbers. To order a part, identify and locate the part by using the illustrations. Note the index number for the part and cross-reference it to the parts list. The part number, description, and quantity required will be found opposite the index number.

In certain cases, it may be desirable to replace a complete assembly instead of overhauling or rebuilding with detail parts. Where complete assemblies are available, they are indicated by a note in the description column to show which parts they include. Detail parts of these assemblies are also available separately.

Parts or assemblies should be ordered directly from AO's Instrument Division plant at Buffalo, N. Y., or from any of AO's authorized dealers. When ordering parts, be sure to include a complete description, part number, and correct quantity.

2. Contents

The following is a list of assemblies broken down in this section:

Stand

Monocular Assembly

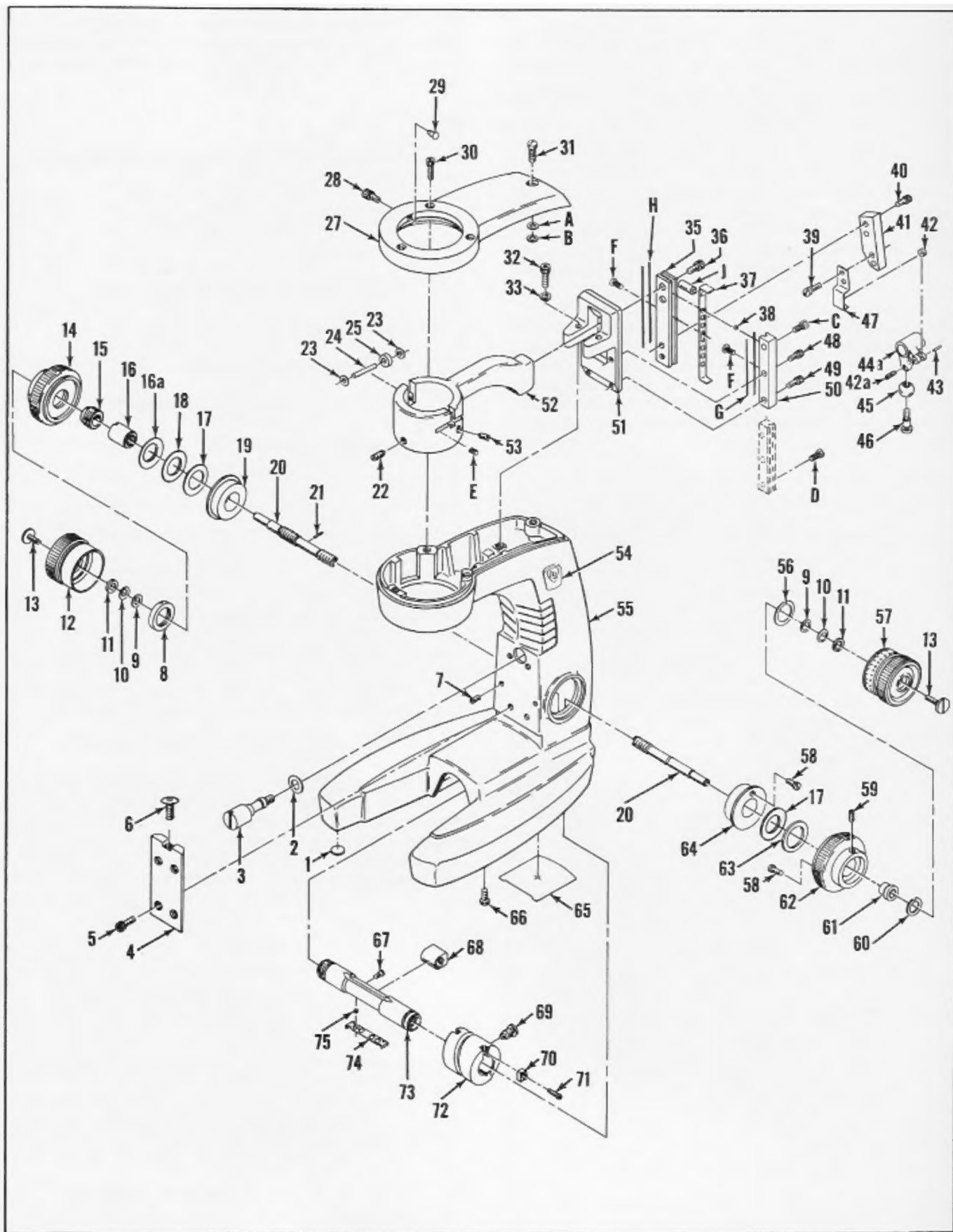
Trinocular (two illustrations)

Ungraduated Conventional Stage

Transformer Assembly

Illuminator, Models 1034 and 1037

Illuminator, Model 1036



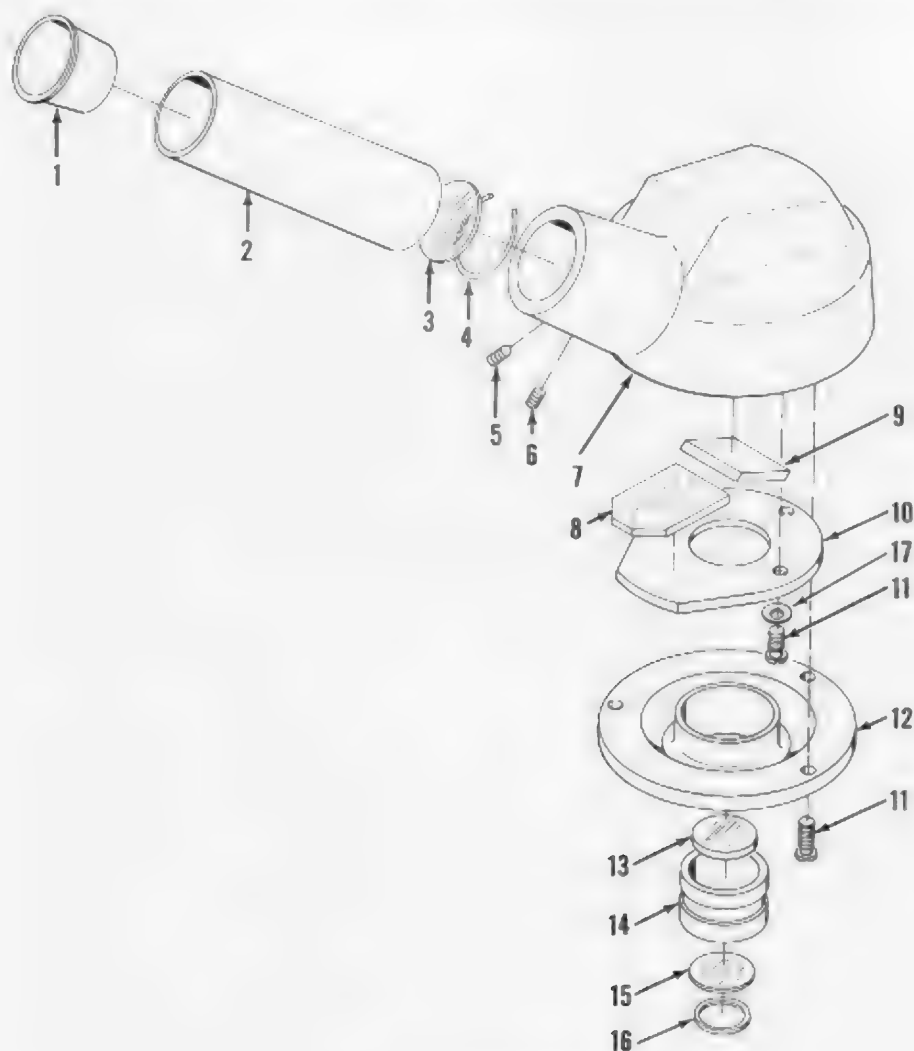
Stand

Stand

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| | 10-800 | Stand | 1 |
| 1 | 2-52 | Foot, base | 4 |
| 2 | 10-88 | Washer | 1 |
| 3 | 10-87 | Screw | 1 |
| 4 | 10-22 | Slide, stage | 1 |
| 5 | X-19448 | Screw | 4 |
| 6 | X-51607-22 | Screw, Allen | 1 |
| 7 | X-20648 | Setscrew | 2 |
| 8 | 10-68 | Nut | 1 |
| 9 | 10-75 | Washer | 2 |
| 10 | X-50491 | Washer, spring | 2 |
| 11 | 10-62 | Washer | 2 |
| 12 | 10-91 | Knob, plain, fine adjustment | 1 |
| 13 | 10-61 | Screw | 2 |
| 14 | 10-90 | Knob, plain, coarse adjustment | 1 |
| | 10-852 | Fine and Coarse Adjustment Assembly (includes items 15, 16, 20, 21, 61, and 67 thru 75) | 1 |
| 15 | 10-66 | Retainer | 1 |
| | 10-501 | Fine Adjustment Screw Assembly (includes items 16, 20, and 68) | 1 |
| 16 | 10-65 | Bushing, adjustable | 1 |
| 16a | X-50864 | Washer, spring | 1 |
| 17 | 10-133 | Washer, flat steel | 2 |
| 18 | 10-76 | Washer, thin fiber | 1 |
| 19 | 10-92 | Bushing | 1 |
| 20 | 10-63 | Shaft | 1 |
| 21 | 01588 | Pin | 2 |
| 22 | 10-93 | Screw | 1 |
| 23 | 10-18 | Washer | 4 |
| 24 | 10-17 | Pin | 2 |
| 25 | 10-21 | Bearing, ball | 2 |
| 27 | 10-7 | Cover | 1 |
| | 10-853 | Lock Screw Assembly (includes items 28 and 29) | 1 |
| 28 | 10-10 | Screw | 1 |
| 29 | 10-95 | Tip, lock screw | 1 |
| 30 | X-19406-58 | Screw | 3 |
| 31 | X-27453-11 | Screw | 1 |
| 32 | X-19466 | Screw | 2 |
| 33 | 01257-2 | Washer | 2 |
| | 10-855 | Arm and Slide Assembly (includes items 34 and 41, and 48 thru 52) | 1 |
| 34 | X-50786 | Pin | 1 |
| 35 | 10-116 | Slide, bearing | 1 |
| 36 | X-19454 | Screw | 2 |
| 37 | 10-97 | Retainer, ball | 2 |
| 38 | B35-14 | Ball, steel | 10 |
| 39 | X-798-1 | Screw | 2 |
| 40 | X-19400 | Screw | 2 |

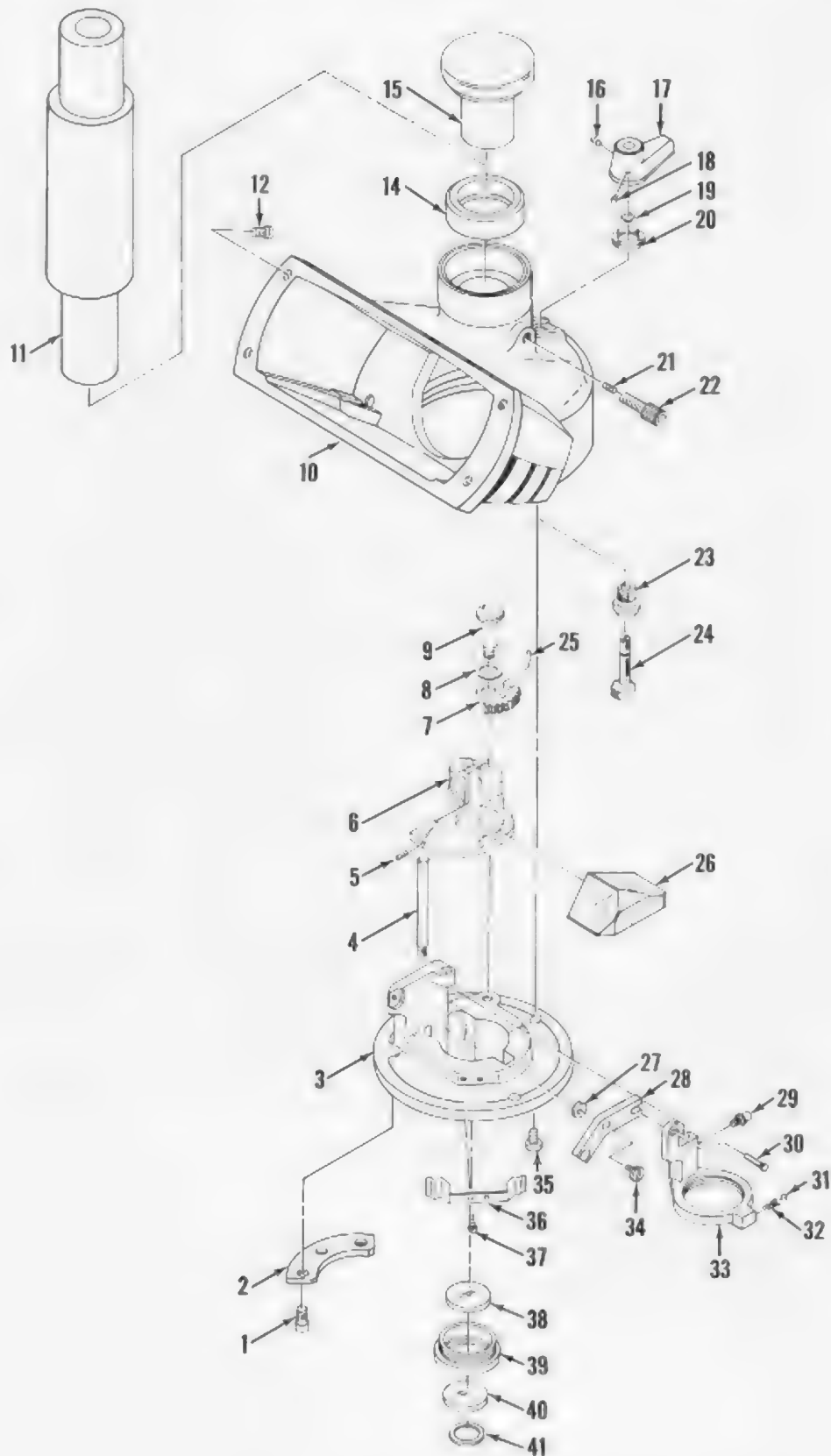
Stand (Cont)

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|--|--------------|
| 41 | 10-28 | Block, slide | 1 |
| | 10-854 | Lever Assembly (includes items 42 thru 46) | 1 |
| 42 | 10-86 | Wheel | 1 |
| 43 | 01521 | Pin | 1 |
| 44 | 10-83 | Lever | 1 |
| 44a | X-25750-58 | Setscrew, Allen | 1 |
| 45 | 10-84 | Ball, adjustment lever | 1 |
| 46 | 10-85 | Screw | 1 |
| 47 | 10-99 | Clip | 1 |
| 48 | X-20078 | Screw | 2 |
| 49 | X-20072 | Screw | 1 |
| 50 | 10-115 | Gib, bearing | 2 |
| 51 | 10-25 | Bracket, bearing | 1 |
| 52 | 10-117 | Arm | 1 |
| 53 | 10-98 | Screw | 2 |
| 54 | X-50963 | Nameplate | 2 |
| 55 | 10-119 | Arm, stand | 1 |
| 56 | X-51180 | Ring, retaining | 1 |
| 57 | 10-60 | Knob, fine adjustment | 1 |
| 58 | X-51603 | Pin | 2 |
| 59 | X-36848 | Screw | 2 |
| 60 | X-50953 | Ring, retaining | 1 |
| 61 | 10-64 | Bearing, shaft | 1 |
| 62 | 10-129 | Knob, coarse adjustment | 1 |
| 63 | 10-134 | Washer, fiber | 1 |
| 64 | 10-131 | Bushing | 1 |
| 65 | 10-96 | Cover | 1 |
| 66 | X-29067-2 | Screw | 2 |
| 67 | 10-135 | Screw | 1 |
| 68 | 10-81 | Follower, fine adjustment | 1 |
| 69 | 10-80 | Screw | 1 |
| 70 | 10-79 | Block, bearing | 2 |
| 71 | 10-122 | Screw | 2 |
| 72 | 10-78 | Worm, coarse adjustment | 1 |
| 73 | 10-67 | Barrel | 1 |
| 74 | 10-82 | Separator | 2 |
| 75 | 10-6 | Ball, steel | 6 |
| A | 01068 | Washer | 1 |
| B | 01030-1 | Washer | 1 |
| C | 10-104 | Screw | 2 |
| D | 10-103 | Screw | 1 |
| E | 10-110 | Spring | 2 |
| F | X-1390-1 | Screw | 4 |
| G | 10-113 | Short Wire Track | 4 |
| H | 10-112 | Long Wire Track | 4 |
| J | 10-102 | Roller | 1 |



Monocular Assembly

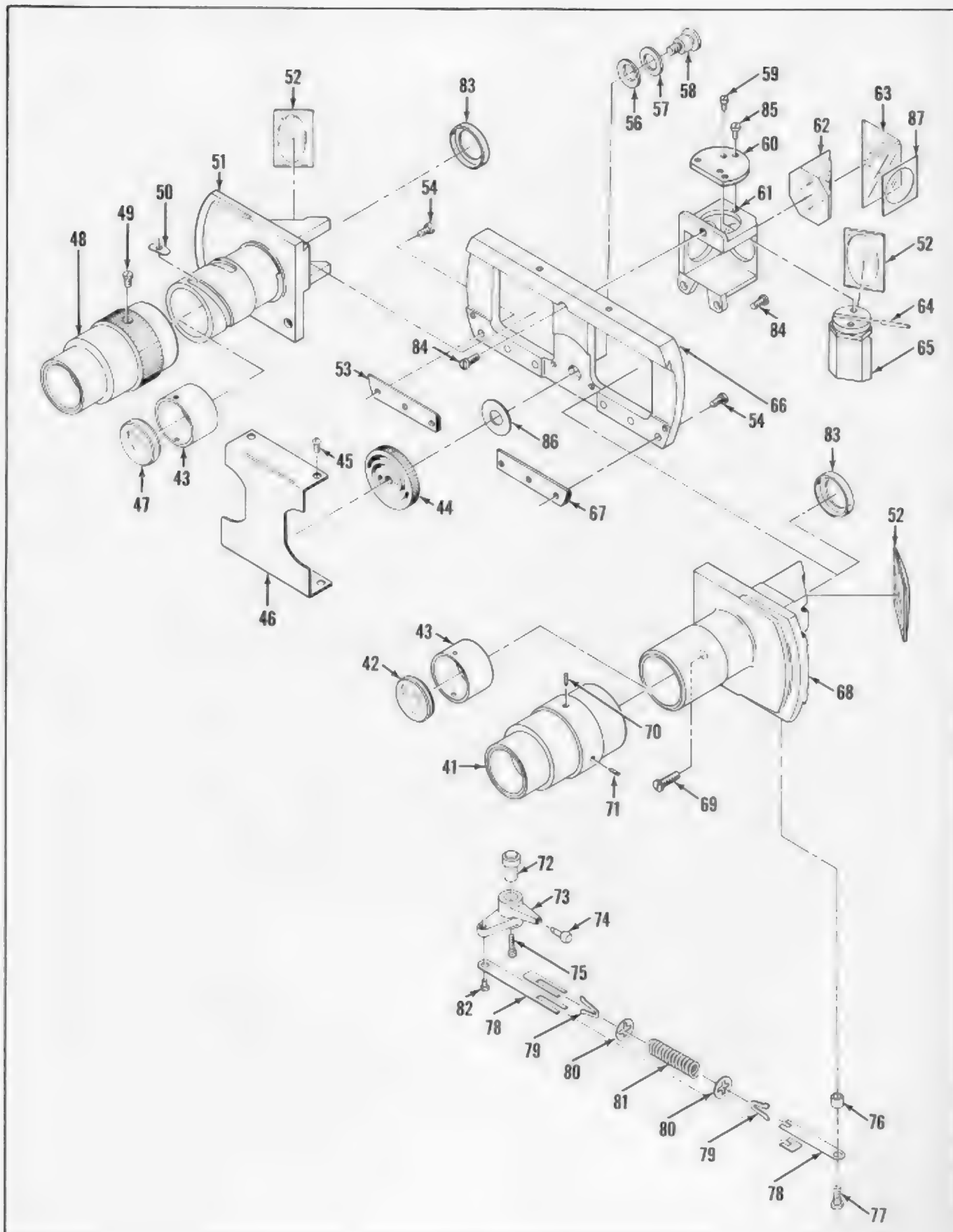
| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| | 1041-800 | Monocular Assembly | 1 |
| 1 | X-50550 | Cap, dust | 1 |
| 2 | 1041-501 | Draw Tube Assembly | 1 |
| 3 | 1042-607 | Window | 1 |
| 4 | 1041-11 | Retainer, window | 1 |
| 5 | X-21336-3 | Setscrew | 1 |
| 6 | X-25100-3 | Setscrew | 1 |
| 7 | 1041-3 | Body | 1 |
| 8 | 1041-601 | Mirror, lower | 1 |
| 9 | 1041-602 | Mirror, top | 1 |
| 10 | 1041-7 | Mount, lower mirror | 1 |
| 11 | 60-57 | Screw | 6 |
| 12 | 1041-4 | Adapter | 1 |
| | 1041-851 | Telescope Cell Assembly (includes items 13, 14, 15, 16) | 1 |
| 13 | 1042-602 | Lens | 1 |
| 14 | 1041-5 | Cell, telescope | 1 |
| 15 | 1042-601 | Lens | 1 |
| 16 | 1042-59 | Diaphragm | 1 |
| 17 | 01091-3 | Cup Washer | 3 |



Trinocular (Sheet 1 of 2)

Trinocular Body

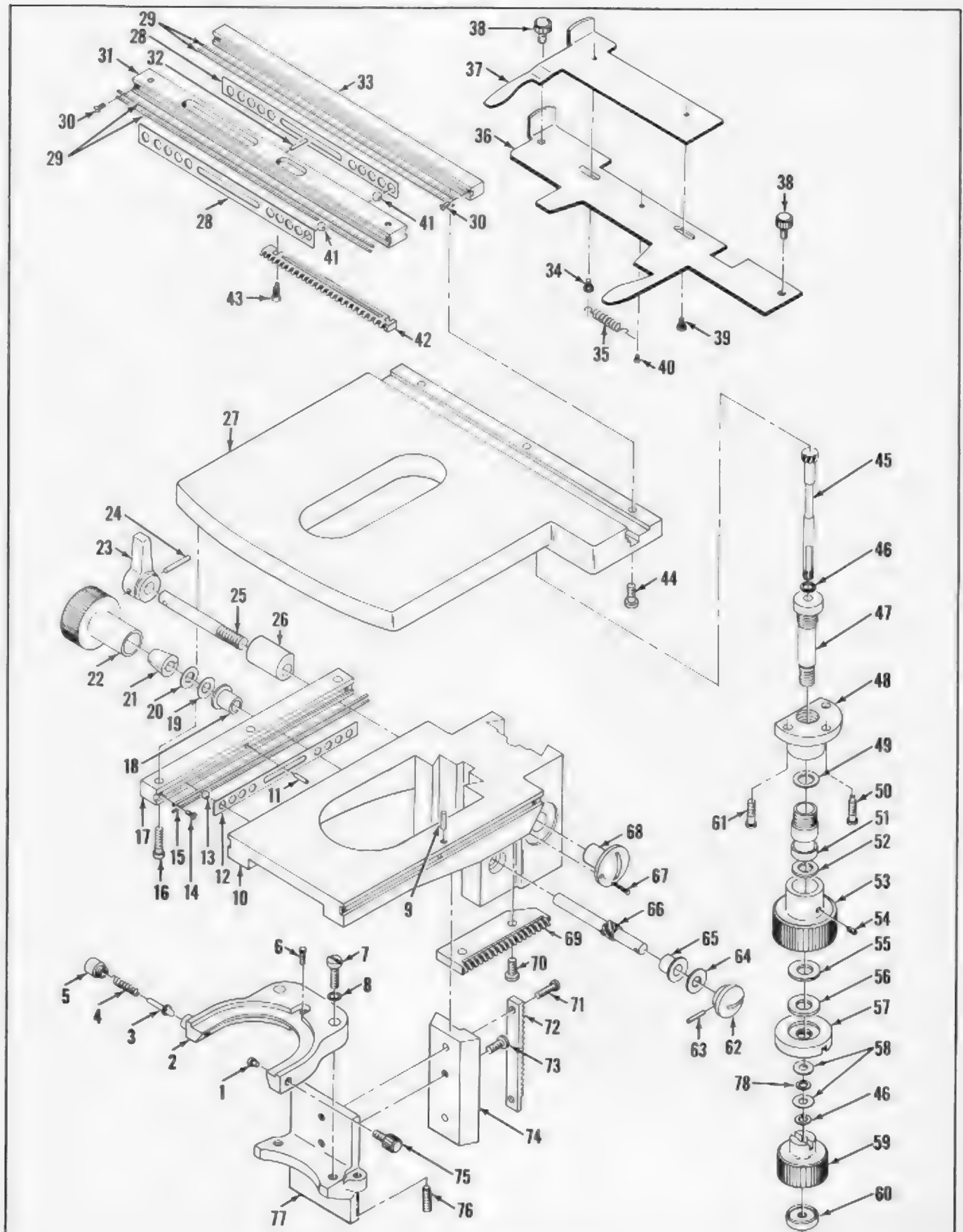
| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| 1 | 1043-800 | Trinocular Body | 1 |
| | 0458 | Screw | 2 |
| | 1043-852 | Telescope and Throw-In Assembly (includes items 2 thru 9, 25 thru 34, and 36) | 1 |
| 2 | 1042-47 | Retainer | 1 |
| 3 | 1043-14 | Adapter | 1 |
| 4 | 1042-41 | Post | 1 |
| | 1043-851 | Prism Mount Assembly (includes items 5, 6, and 26) | 1 |
| 5 | 01541 | Pin, Index | 1 |
| 6 | 1043-16 | Mount | 1 |
| 7 | 1043-61 | Gear | 1 |
| 8 | 01235 | Washer, spring | 1 |
| 9 | 1043-68 | Screw | 1 |
| | 1043-854 | Body Lever and Arm Assembly (includes items 10, 13, 19, 20, 23, 24, 72 thru 75, and 78 thru 82) | 1 |
| 10 | 1043-502 | Body Assembly | 1 |
| 11 | 1043-501 | Camera Tube Assembly | 1 |
| 12 | 1042-52 | Screw | 7 |
| 14 | 01374 | Spacer | 1 |
| 15 | 1043-74 | Cap | 1 |
| 16 | X-21336 | Setscrew | 1 |
| 17 | 1043-66 | Lever | 1 |
| 18 | X-25100 | Setscrew | 1 |
| 19 | X-50820 | Ring, retaining | 1 |
| 20 | 1043-64 | Nut, lock | 1 |
| | 1043-853 | Lock Screw Assembly (includes items 21 and 22) | 1 |
| 21 | 10-95 | Tip | 1 |
| 22 | 1043-76 | Screw | 1 |
| 23 | 1043-63 | Bushing | 1 |
| 24 | 1043-62 | Pinion | 1 |
| 25 | X-50763 | Pin | 1 |
| 26 | 1043-603 | Prism, deviating | 1 |
| 27 | 1042-39 | Washer | 1 |
| 28 | 1042-38 | Lever | 1 |
| 29 | 1043-67 | Pin | 1 |
| 30 | 1042-50 | Screw, pilot | 1 |
| 31 | 10-6 | Ball | 1 |
| 32 | 1042-46 | Spring | 1 |
| 33 | 1043-25 | Mount | 1 |
| 34 | 1042-40 | Screw | 1 |
| 35 | 60-57 | Screw | 3 |
| 36 | 1043-29 | Spring, index | 1 |
| 37 | 1042-52 | Screw | 2 |
| | 1042-851 | Objective Cell Assembly (includes items 38 thru 41) | 1 |
| 38 | 1042-602 | Lens, flint | 1 |
| 39 | 1042-42 | Cell, objective | 1 |
| 40 | 1042-601 | Lens, crown | 1 |
| 41 | 1042-59 | Diaphragm | 1 |



Trinocular (Sheet 2 of 2)

Trinocular Body (Cont)

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|--|--------------|
| 41 | 1042-18 | Sleeve, fixed | 1 |
| | 1042-853 | Right Hand Slide Assembly (incl. items 43, 47, 51, and 52) | 1 |
| | 1042-854 | Left Hand Slide Assembly (incl. items 42, 43, 52, and 68) | 1 |
| | 1042-857 | Right Hand Diaphragm and Window Assembly (incl. items 42 and 43) | 1 |
| | 1042-858 | Left Hand Diaphragm and Window Assembly (incl. items 43 and 47) | 1 |
| 42 | 1042-607 | Window, right hand | 1 |
| 43 | 1042-45 | Diaphragm | 2 |
| | 1042-859 | Slideway Assembly (incl. items 44, 53 thru 58, 66 and 67) | 1 |
| 44 | 1042-26 | Wheel, thumb | 1 |
| 45 | X-34585 | Screw | 4 |
| 46 | 1042-3 | Cover | 1 |
| 47 | 1042-608 | Window, left hand | 1 |
| 48 | 1042-20 | Sleeve, focusing | 1 |
| 49 | 0281-22 | Screw | 1 |
| 50 | 1042-43 | Key, focusing | 1 |
| 51 | 1042-9 | Slide, left hand | 1 |
| | 1042-856 | Mount and Prism Assembly (incl. items 52, 54, and 61 thru 65) | 1 |
| | 1042-852 | Center Mirror Assembly (incl. items 52 and 65) | 1 |
| 52 | 1042-606 | Mirror | 3 |
| 53 | 1042-48 | Gib, left hand | 1 |
| 54 | 0458 | Screw | 8 |
| 56 | 01163 | Washer, spring | 1 |
| 57 | 01293 | Washer | 1 |
| 58 | 0142-54 | Screw | 1 |
| 59 | X-32524 | Screw | 2 |
| 60 | 0142-55 | Plate | 1 |
| 61 | 1042-5 | Mount, center prism | 1 |
| 62 | 1042-605 | Prism, upper | 1 |
| 63 | 1042-604 | Prism, lower | 1 |
| 64 | 1042-56 | Pin | 1 |
| | 1042-852 | Center Mirror Assembly (incl. items 52 and 65) | 1 |
| 65 | 1042-28 | Mount, center mirror | 1 |
| 66 | 1042-10 | Slideway | 1 |
| 67 | 1042-49 | Gib, right hand | 1 |
| 68 | 1042-7 | Slide, right hand | 1 |
| 69 | 1042-51 | Screw, pilot | 2 |
| 70 | X-51403 | Setscrew | 1 |
| 71 | X-25749 | Setscrew | 1 |
| 72 | 1042-37 | Bushing | 1 |
| 73 | 1042-35 | Lever | 1 |
| 74 | 1042-36 | Pin, ball | 1 |
| 75 | X-32402-22 | Screw | 1 |
| 76 | 1043-30 | Spacer | 1 |
| 77 | 1042-30 | Screw | 1 |
| 78 | 1043-69 | Arm | 2 |
| 79 | 1043-72 | Clip | 2 |
| 80 | 1043-71 | Retainer, spring | 2 |
| 81 | 1043-70 | Spring | 1 |
| 82 | 1042-33 | Screw | 1 |
| 83 | 1042-58 | Diaphragm | 2 |
| 84 | 1042-52 | Screw | 3 |
| 85 | 1042-62 | Screw | 3 |
| 86 | X-51368 | Washer | 1 |
| 87 | 1042-61 | Diaphragm | 3 |



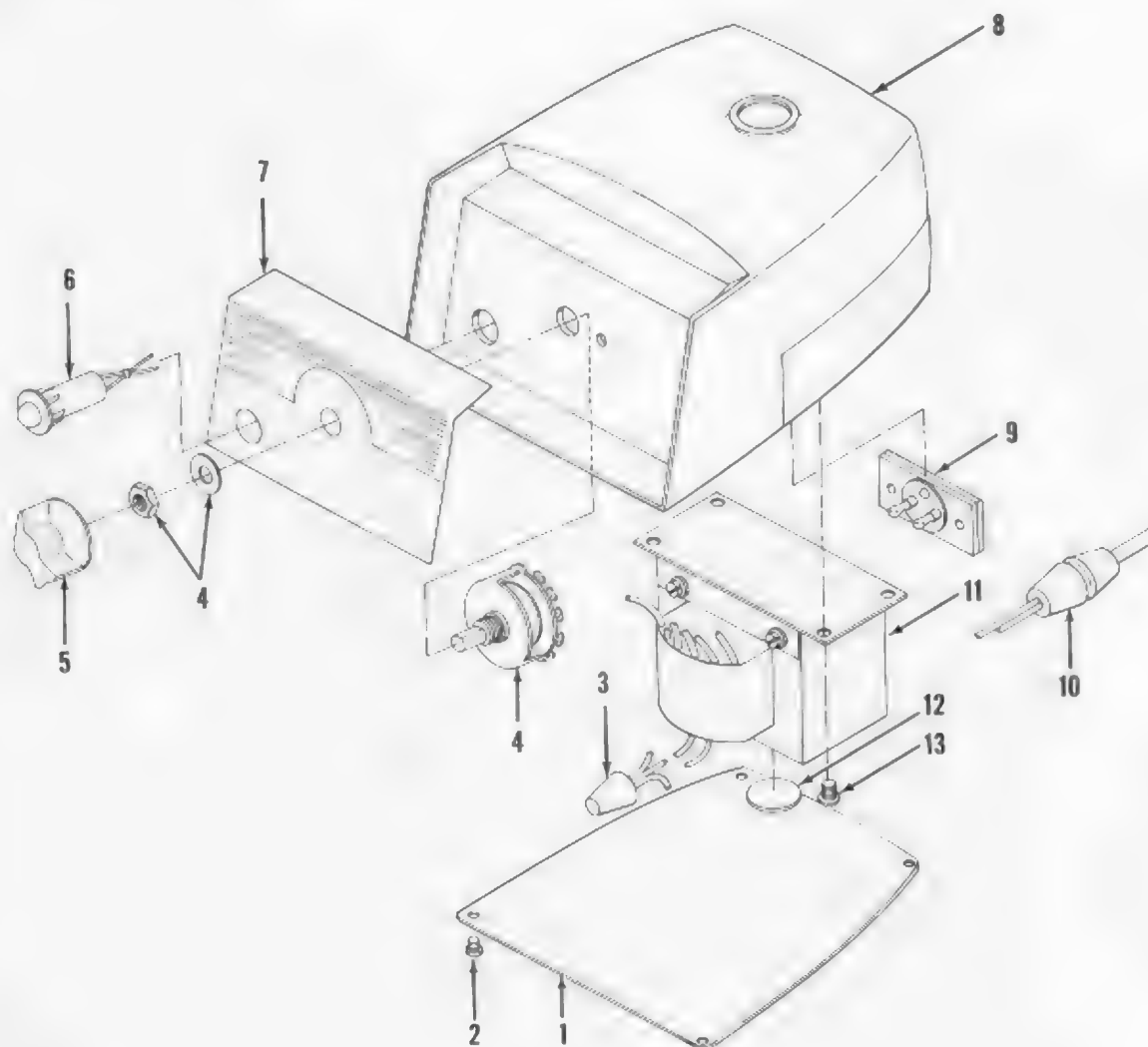
Ungraduated Mechanical Stage

Ungraduated Mechanical Stage

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| | 1062-800 | Ungraduated Mechanical Stage | 1 |
| | 10-853 | Lock Screw (includes items 1 and 75) | 1 |
| 1 | 10-95 | Tip | 1 |
| 2 | 10-49 | Holder, condenser | 1 |
| 3 | 35-38 | Plunger | 1 |
| 4 | B35-40 | Spring | 1 |
| 5 | 1062-50 | Cap, plunger | 1 |
| 6 | B35-79 | Index, condenser | 1 |
| 7 | 0865-40 | Screw | 2 |
| 8 | 01025-1 | Washer | 2 |
| 9 | X-50468 | Pin | 1 |
| 10 | 1062-4 | Base, stage | 1 |
| 11 | X-50947 | Pin | 2 |
| 12 | 1062-18 | Separator, short | 2 |
| 13 | 18020-348 | Ball | 16 |
| 14 | X-1390-1 | Screw | 8 |
| 15 | 1062-19 | Track, short | 8 |
| 16 | 1062-54 | Screw | 3 |
| 17 | 1062-20 | Guide, short | 1 |
| 18 | B35-47 | Bearing | 1 |
| 19 | 01186-1 | Washer | 1 |
| 20 | 1062-60 | Washer | 1 |
| 21 | 35-48 | Bearing, thrust | 2 |
| 22 | 1062-38 | Knob | 1 |
| | 1062-853 | Lock Shaft and Lever Assembly (includes items 23 thru 25) | 1 |
| 23 | 1062-35 | Lever | 1 |
| 24 | X-15086 | Pin | 1 |
| 25 | 1062-39 | Shaft | 1 |
| 26 | 1062-41 | Lock, slide | 1 |
| 27 | 1062-2 | Stage | 1 |
| 28 | 1062-8 | Separator, long | 2 |
| 29 | 1062-21 | Track, long | 8 |
| 30 | 0128-1 | Screw | 8 |
| 31 | 1062-7 | Slide, cross | 1 |
| 32 | X-50707 | Pin | 1 |
| 33 | 1062-51 | Guide, long | 1 |
| | 1062-852 | Slide Holder Assembly (includes items 34 thru 40) | 1 |
| 34 | 1062-12 | Screw | 1 |
| 35 | B33-79 | Spring | 1 |
| 36 | 1062-10 | Finger, fixed | 1 |
| 37 | 1062-11 | Finger, sliding | 1 |
| 38 | 1062-14 | Knob | 2 |
| 39 | 1062-13 | Screw | 1 |
| 40 | 0866-1 | Screw | 1 |
| 41 | 11330-90 | Ball | 20 |
| 42 | 1062-9 | Rack, long | 1 |
| 43 | 0861-1 | Screw | 2 |
| 44 | 1062-53 | Screw | 3 |

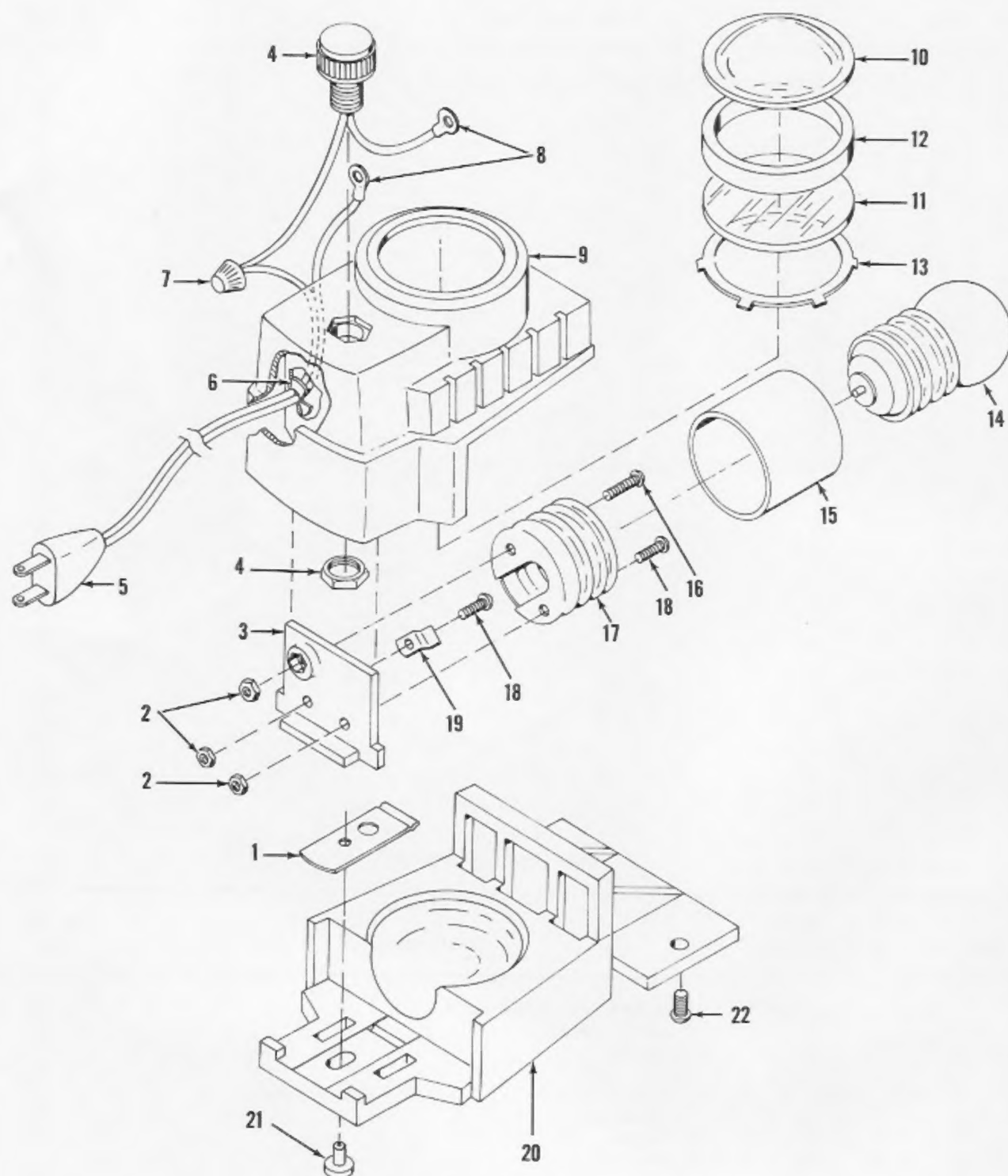
Ungraduated Mechanical Stage (Cont)

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| | 1062-851 | Control Assembly (includes items 45 thru 49 and 51 thru 60) | 1 |
| 45 | 1062-22 | Shaft, inner | 1 |
| 46 | 1062-58 | Washer | 2 |
| 47 | 1062-24 | Sleeve | 1 |
| 48 | 1062-23 | Mount, sleeve | 1 |
| 49 | 1062-26 | Bearing, thrust | 1 |
| 50 | 1062-15 | Screw, stop | 1 |
| 51 | 1062-25 | Shaft, outer | 1 |
| 52 | 1062-32 | Bearing, thrust | 1 |
| 53 | 1062-28 | Knob, large | 1 |
| 54 | X-36845 | Setscrew | 1 |
| 55 | 1062-27 | Washer, thrust | 1 |
| 56 | 1062-59 | Washer, thrust | 1 |
| 57 | 1062-29 | Nut, adjustable | 1 |
| 58 | 1062-30 | Bearing, thrust | 2 |
| 59 | 1062-31 | Knob, small | 1 |
| 60 | 1062-16 | Nut | 1 |
| 61 | 1062-42 | Screw | 2 |
| | 1062-854 | Adjustable Pinion Assembly (includes items 62 thru 66) | 1 |
| 62 | 1062-37 | Button, slide | 1 |
| 63 | X-15084 | Pin | 1 |
| 64 | 01183-1 | Washer | 1 |
| 65 | B35-47 | Bearing | 1 |
| 66 | 1062-36 | Pinion | 1 |
| 67 | 1062-61 | Screw | 1 |
| 68 | 1062-40 | Button, locking | 1 |
| 69 | 1062-17 | Rack, short | 1 |
| 70 | 1062-45 | Screw | 2 |
| 71 | 0862-1 | Screw | 2 |
| 72 | 1062-57 | Rack | 1 |
| 73 | 0863-1 | Screw | 1 |
| 74 | 1062-46 | Slide, bracket | 1 |
| 75 | 10-10 | Screw | 1 |
| 76 | X-36702 | Screw | 1 |
| 77 | 1062-48 | Bracket | 1 |
| 78 | 01219 | Washer | 1 |



Transformer Assembly

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|--|--------------|
| | 1051-800 | Transformer Assembly | 1 |
| 1 | 1051-3 | Cover, bottom | 1 |
| 2 | X-9542-2 | Screw | 4 |
| 3 | X-50282 | Nut, wire | 2 |
| 4 | 1051-2 | Switch, rotary (nut and lockwasher supplied) | 1 |
| 5 | 10500-851 | Knob Assembly, switch | 1 |
| 6 | 11144-7 | Light, pilot | 1 |
| 7 | 1051-4 | Nameplate | 1 |
| 8 | 651-15 | Cover, case | 1 |
| 9 | 651-5 | Receptacle | 1 |
| 10 | 651-10 | Cord Set | 1 |
| 11 | 1051-1 | Transformer | 1 |
| 12 | 11201-77 | Pad, base | 1 |
| 13 | X-9548-2 | Screw | 4 |



Illuminator, Models 1034 and 1037

Illuminator Assembly

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|---|--------------|
| | 1034-800 | Illuminator Assembly | 1 |
| | 1037-800 | Illuminator Assembly | 1 |
| 1 | 1037-4 | Slide, lock | 1 |
| 2 | X-8000-1 | Nut | 3 |
| 3 | 1037-5 | Support, socket shell | 1 |
| 4 | 1037-8 | Switch, rotary (nut supplied) | 1 |
| 5 | 1037-10 | Cord Set | 1 |
| 6 | X-36442 | Strain Relief | 1 |
| 7 | X-50060 | Nut, wire | 1 |
| 8 | X-50039 | Connector, wire | 2 |
| 9 | 1037-2 | Housing, lamp | 1 |
| 10 | 610-601 | Lens (used on 1034-800 only) | 1 |
| | 1037-602 | Lens (used on 1037-800 only) | 1 |
| 11 | 1037-3 | Ring, separator (used on 1037-800 only) | 1 |
| 12 | 614-601 | Glass, blue (used on 1034-800 only) | 1 |
| | 1037-601 | Glass, blue (used on 1037-800 only) | 1 |
| 13 | X-50882 | Ring, retaining | 1 |
| 14 | 611-1 | Lamp | 1 |
| 15 | 1037-6 | Sleeve, shell | 1 |
| 16 | X-80-1 | Screw | 1 |
| 17 | 610-7 | Shell, socket | 1 |
| 18 | X-68-1 | Screw | 2 |
| 19 | 610-9 | Connector, terminal | 1 |
| 20 | 1034-2 | Base, lamp (used on 1034-800 only) | 1 |
| | 1037-9 | Base, lamp (used on 1037-800 only) | 1 |
| 21 | 1037-7 | Rivet, slide | 1 |
| 22 | X-29067-2 | Attaching Screw | 2 |

Illuminator Assembly

| Index No. | Part Number | Description | Qty Per Assy |
|-----------|-------------|--|--------------|
| | 1036-800 | Illuminator Assembly | 1 |
| | 1036-858 | Mirror and Bracket Assembly (includes items 1 and 2) | 1 |
| 1 | 1036-604 | Mirror | 1 |
| 2 | 1036-39 | Mount, mirror | 1 |
| 3 | 1036-5 | Cover | 1 |
| 4 | X-1396 | Screw | 4 |
| 5 | 0306-1 | Screw | 3 |
| 6 | 1036-16 | Spring | 3 |
| 7 | 1036-34 | Shaft | 1 |
| 8 | 1036-33 | Bracket | 1 |
| 8a | X-8010-2 | Nut, hexagonal | 1 |
| 9 | 1036-608 | Filter, neutral density | 1 |
| 10 | 1036-35 | Ring, retaining | 1 |
| 11 | X-25100 | Setscrew | 1 |
| 12 | X-21336 | Setscrew | 1 |
| 13 | 1036-15 | Lever | 1 |
| 14 | 01228-2 | Washer, spring | 1 |
| 15 | 01112 | Washer | 1 |
| 16 | X-50947 | Pin | 1 |
| 17 | 1036-31 | Housing, lamp | 1 |
| 18 | X-20745 | Setscrew | 2 |
| | 1036-852 | Window and Mount Assembly (includes items 19 thru 21) | 1 |
| 19 | X-51327 | Ring, retaining | 1 |
| 20 | 1036-606 | Window | 1 |
| 21 | 1036-40 | Mount, window | 1 |
| 22 | 1036-10 | Clip, spring | 1 |
| 23 | 0143 | Screw | 2 |
| 24 | X-51326 | Nut | 2 |
| | 1036-855 | Cord Socket and Housing Assembly (includes items 25 thru 31) | 1 |
| 25 | X-36441 | Strain Relief | 1 |
| 26 | 1036-18 | Cord Set | 1 |
| 27 | 1036-22 | Adapter | 1 |
| 28 | X-20631 | Setscrew | 1 |
| 29 | 1036-4 | Housing, socket | 1 |
| 30 | 1036-20 | Socket | 1 |
| 31 | 1033 | Lamp | 1 |
| 32 | X-25484 | Setscrew | 2 |
| 33 | X-36687 | Setscrew | 1 |
| 34 | 01294 | Spacer | AR |
| | 1036-853 | Lens Assembly (includes items 35 thru 41) | 1 |
| 35 | 1036-7 | Ring, retaining | 1 |
| 36 | 1036-601 | Lens, first | 1 |
| 37 | 1036-6 | Cell, lens | 1 |
| 38 | 1036-602 | Lens, second | 1 |
| 39 | 1036-8 | Spacer | 1 |
| 40 | 1036-603 | Lens, third | 1 |
| 41 | 1036-9 | Ring, retaining | 1 |
| 42 | X-29067-2 | Screw | 2 |
| 43 | 1036-856 | Bulb Remover Tube | 1 |